Title: **IASI 343 METAL IONS IN MEDICINE**

Course director: Prof. dr. Kristina Gopcevic
Number of classes: 30
Number of students: up to 20
Assessment methods: seminar paper
Organizer and performer: Department of Chemistry
Semester of study: fourth (IV)

Course objective: The study of the role of biometals in the body is a relatively new field and is most often called elemental medicine. Since metal ions are found as cofactors in over 30% of enzymes, their study is closely related to proteomics (the study of proteins) and represents a separate area-metallomix. Through the lectures, students will be explained the concept of metallomix as a link between organic and inorganic parts of the body, as well as experimental methods used to elucidate the mechanisms of action of metal-related proteins.The role of biometals in the healthy organism, and in pathologies caused by their lack or excessive intake, will be addressed through certain topics. The importance of certain biometals in endocrine, nephrological, hematological, and neurological diseases will be discussed through short introductory lectures and seminar papers with students. Selected practicals will also be done.

TEACHING PROGRAM:

Lectures (recorded):

1. Biometals-role and classification - 2 classes,
2. Toxic metals-2 classes
3. Metalomix-basic concept- 2 classes
4. Metalomix - experimental methods - 2 classes
5. Chelation therapy - 2 classes

Seminars (on line):

1. Metal ions and endocrine system: The role of selenium in the regulation of thyroid gland function (seminar) -2 classes,
2. Metal ions and neurodegenerative diseases: The role of aluminum in the etiology of Alzheimer's disease (seminar) - 2 classes,
3. Metals in hematology: The role of iron in anemia (seminar) - 2 classes,
4. Kidney diseases caused by heavy metal poisoning (seminar) - 2 class
5. Metals in food and food supplements, recommended daily doses for the intake of bioelements in the body - seminar - 2 classes.

Practicals (on line):

1. Polyacrylamide gel electrophoresis: native and denaturated-2+ 2 classes
2. Determination of matrix metalloproteinase activity in the serum of patients with selected pathology using gelatin zymography technique: 3 classes
3. Quantification of the obtained results using software programs, 3 classes